

Front Tracking for Hyperbolic Conservation Laws. By Helge Holden and Nils Henrik Risebro. Springer-Verlag, New York. (2002). 363 pages. \$64.95, EUR 64.95, SFR 108.00, GBP 45.50.

Contents:

Preface. 1. Introduction. 2. Scalar conservation laws. 3. A short course in difference methods. 4. Multidimensional scalar conservation laws. 5. The Riemann problem for systems. 6. Existence of solutions of the Cauchy problem. 7. Well-posedness of the Cauchy problem. A. Total variation, compactness, etc. B. The method of vanishing viscosity. C. Answers and hints. References. Index.

Partial Differential Equations: Methods and Applications, Second Edition. By Robert C. McOwen. Prentice Hall, Upper Saddle River, NJ. (2003). 452 pages. \$95.00.

Contents:

Preface. Introduction. 1. First-order equations. 2. Principles for higher-order equations. 3. The wave equation. 4. The Laplace equation. 5. The heat equation. 6. Linear functional analysis. 7. Differential calculus methods. 8. Linear elliptic theory. 9. Two additional methods. 10. Systems of conservation laws. 11. Linear and nonlinear diffusion. 12. Linear and nonlinear waves. 13. Nonlinear elliptic equations. Appendix on physics. Hints and solutions for selected exercises. References. Index. Index of symbols.

The Hybrid Multiscale Simulation Technology: An Introduction with Application to Astrophysical and Laboratory Plasmas. By Alexander S. Lipatov. Springer-Verlag, Berlin. (2002). 403 pages. \$79.95, EUR 73.95, SFR 123.00, GBP 52.00.

Contents:

Preface. Part I. Computational models and numerical methods. 1. Physical systems and computational models. 2. Particle-mesh models. 3. Time integration of the particle motion equations. 4. Density and current assignment. Force interpolation. Conservation laws. 5. Time integration of the field and electron pressure equations. 6. General loops for hybrid codes. Multiscale methods. 7. Particle loading and injection. Boundary conditions. Part II. Applications. 8. Collisionless shock simulation. 9. Tangential discontinuity simulation. 10. Magnetic field reconnection simulation. 11. Beam dynamics simulation. 12. Interaction of the solar wind with astrophysical objects. 13. Appendix. 14. Solutions. References. Index.

Decisions, Uncertainty, and the Brain: The Science of Neuroeconomics. By Paul W. Glimcher. The MIT Press, Cambridge, MA. (2003). 375 pages. \$37.95.

Contents:

Acknowledgments. Further reading. Preface. I. Historical approaches. 1. René Descartes and the birth of neuroscience. 2. Inventing the reflex. 3. Charles Sherrington and the propositional logic of reflexes. 4. Finding the limits of the Sherringtonian paradigm. 5. Neurobiology today: Beyond reflexology? 6. Global computations: An alternative to Sherrington? 7. Modularity and evolution. II. Neuroeconomics. 8. Defining the goal: Extending Marr's approach. 9. Evolution, probability, and economics. 10. Probability, valuation, and neural circuits: A case study. 11. Irreducible uncertainty and the theory of games. 12. Games and the brain. 13. Putting it all together I. Behavior and physiology. 14. Putting it all together II. Philosophical implications. References. Index.

The Economics of Marine Resources and Conservation Policy: The Pacific Halibut Case Study with Commentary. Edited by James A. Crutchfield and Arnold Zellner. The University of Chicago Press, Chicago. (2003). 226 pages. \$60.00, £42.00.

Contents:

Introduction and overview. Economic aspects of the Pacific halibut fishery. Part 1. Basic theory of regulation and its application to halibut fishery. 1. Pacific halibut fishery. 2. Theoretical basis for management. 3. Objectives of fishery management. 4. History of regulation of the halibut fishery. Part 2. Economic effects of the halibut program. 5. General effects of the halibut program. 6. Analysis of port pricing of halibut: Theoretical considerations. 7. Analysis of port pricing of halibut: Empirical results. 8. Economic survey of boats and fishermen. Part 3. Conclusions from analysis and implications for public policy. 9. Economic status of the halibut fishery. 10. Summary of economic performance. 11. Policy implications. Appendixes.

Commentary. 1. The Crutchfield and Zellner monograph and the evolution of environmental and resource economics (David Zilberman). 2. Price-oriented management and the Pacific halibut (Anthony Scott). 3. Crutchfield and Zellner on exvessel price determination in the Pacific halibut fishery (James E. Wilen and Frances R. Homans). 4. The halibut fishery (Donald McCaughran). Index.

A SINGULAR Introduction to Commutative Algebra. By Gert-Martin Greuel and Gerhard Pfister, with contributions by Olaf Bachmann, Christoph Lossen and Hans Schönemann. Springer-Verlag, Berlin. (2002). 588 pages. \$44.95, EUR 39.95 (CD-ROM included).

Contents:

Preface. 1. Rings, ideals and standard bases. 2. Modules. 3. Noether normalization and applications. 4. Primary decomposition and related topics. 5. Hilbert function and dimension. 6. Complete local rings. 7. Homological algebra. Appendix. A. Geometric background. B. SINGULAR—A short introduction. References. Glossary. Index.